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Leader, China Energy Group
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EMPLOYMENT

Lawrence Berkeley National Laboratory, Berkeley, California
1990 - Present

Price Associates, Berkeley, California
1989 - 1990

MHB Technical Associates, San Jose, California
1983 -1989

PROFESSIONAL EXPERIENCE

- Lead author, Intergovernmental Panel on Climate Change Second Assessment Report, Technical Paper on Technologies, Policies and Measures for Mitigating Climate Change, Special Report on Emissions Scenarios, Third Assessment Report, Fourth Assessment Report, Fifth Assessment Report
- Principal investigator, Energy Foundation China projects on industrial energy efficiency policies and programs, modeling, benchmarking, auditing, energy-efficient technologies and measures, and low-carbon development in China
- Principal investigator, U.S. Department of Energy projects related to industrial sector energy efficiency policies and programs in China
- Principal investigator, U.S. Environmental Protection Agency projects related to benchmarking, energy efficiency improvement, and use of alternative fuels for the Chinese cement industry
- Principal investigator, U.S. Department of State project for the Asia Pacific Partnership on cement industry energy efficiency and greenhouse gas mitigation in China
- Principal investigator, California Air Resources Board project on Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to Greenhouse Gas Emission Reduction Targets
- Principal investigator, California Energy Commission project on development of an energy balance for the State of California and on optimization of product lifecycle greenhouse gas emissions from products produced in California
- Principal investigator, Energy Foundation China, Rocky Mountain Institute, and Energy Research Institute project on Reinventing Fire: China modeling China's potential energy use and CO2 emissions in 2050

- Scientist, U.S. Environmental Protection Agency projects related to development of multi-project baselines for evaluation of greenhouse gas mitigation projects in the electricity and industrial sectors, benchmarking of energy-intensive industrial sectors, and analysis of the energy-efficiency and greenhouse gas mitigation potential of selected industrial sectors

PROFESSIONAL SERVICE AND AWARDS

Affiliated Faculty, Energy and Resources Group, University of California-Berkeley

Group Leader of the China Energy Group, Energy Analysis & Environmental Impacts Department, Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory

Guest Professor, University of Science and Technology Beijing

Member of China Industry Team, which was awarded the *Extraordinary Achievement and Leadership Results Award* in 2010 by ClimateWorks Foundation

Member of China Cement Kiln Project Team that was awarded the U.S. Environmental Protection Agency's *James W. Craig Pollution Prevention Leadership Award* – 2009.

Lead Author of Intergovernmental Panel on Climate Change (which won the Nobel Peace Prize 2007)

Member of the Strategic Advisory Group of the Institute for Industrial Productivity

Member of the Leadership Council of the China-U.S. Energy Efficiency Alliance

Outstanding Performance Award, Lawrence Berkeley National Laboratory – 2007, 1999, 1995

Deputy Group Leader, International Energy Studies Group, Energy Analysis Department, Lawrence Berkeley National Laboratory – 1998 to 2007

Co-Chair, 2003 American Council for an Energy-Efficient Economy's Summer Study on Energy Efficiency in Industry

Reviewer for *Energy*, *The International Journal*, *Energy Policy*, *Climate Policy*, *Journal of Industrial Ecology*, *Environmental Science & Technology*, and the *ACEEE Summer Study on Energy Efficiency in Industry*

Host and advisor for international guests in the International Energy Studies Group and China Energy Group at Lawrence Berkeley National Laboratory

EDUCATION

University of Wisconsin – Madison, Institute For Environmental Studies

Master of Science in Land Resources, May 1982

Phi Kappa Phi Honor Society

University of Wisconsin - Madison

Bachelor of Arts in Geography, May 1980

Graduation with Distinction

PUBLICATIONS

Price, L., Zhou, N., Fridley, D., Lu, H., Hong, L., Fino-Chen, C., Ke, J., Ohshita, S., Hu, M., Zhou, Y., Hammer, S., and Hu, X., Forthcoming. "Energy-Efficiency and Greenhouse Gas Mitigation Policy Options: Assisting Chinese Cities in Prioritizing and Choosing Strategies to Implement to Become a Sustainable Community", *Proceedings of the American Council for An Energy-Efficient Economy 2014 Summer Study on Energy Efficiency*. Washington DC: ACEEE.

Fischedick, M., Roy, J., Abdel-Aziz, A., Acquaye, A., Allwood, J., Ceron, J-P., Geng, Y., Kheshgi, H., Lanza, A., Perczyk, D., Price, L., Santalla, E., Sheinbaum, C., Tanaka, K., Baiocchi, G., Calvin, K., Daenzer, K., Dasgupta, S., Delgado, G., El Hagggar, S., Fleiter, T., Hasanbeigi, A., Höller, S., Jewell, J., Mulugetta, Y., Neelis, M., de la Rue du Can, S., Themelis, N. Venkatagiri, K.S., Yetano Roche, M. 2014. "Industry," Chapter 10 in: *Climate Change 2014 Mitigation of Climate Change*. Working Group III Contribution to the IPCC 5th Assessment Report. Intergovernmental Panel on Climate Change.

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Hasanbeigi, A., Zeyi J., Price, L. 2014. "Why the Energy Use of Chinese Steel Industry May Peak as Early as 2015?" *Proceedings of the 2014 ECEEE Summer Study on Energy Efficiency in Industry*, June 2-5, 2014. Arnhem, the Netherlands.

Hasanbeigi, A., Lobscheid, A., Lu, H., Price, L., Dai, Y. 2014. "Including the Co-benefits of Energy-Efficiency Programs and Projects in Cost-Benefit Analysis - A Case Study for the Cement Industry." *Proceedings of the International Conference on Clean Energy*. June 8-12, 2014. Istanbul, Turkey.

Hasanbeigi, A., Price, L. 2014. "Emerging Technologies for an Energy-Efficient, Water-Efficient, and Low-Pollution Textile Industry: A Technical Review." *Proceedings of the International Conference on Clean Energy*. June 8-12, 2014. Istanbul, Turkey.

Hasanbeigi, A., Price, L., Lu, H., Fino-Chen, C., Ke, J. 2013. "Retrospective and Prospective Decomposition Analysis of Chinese Manufacturing Energy Use and Policy Implications for Industry Structural Change." *Proceedings of the International Conference on Frontier Issues in Economics and Management*. Beijing University of Chemical Technology. July 3-4, 2013.

Hasanbeigi, A., Kong, L., Arens, M., Price, L. 2013. "Emerging Energy-Efficiency and CO₂ Emissions-Reduction Technologies for Industry: A Review of Technologies for Alternative Ironmaking and Pulp and Paper Industry." *Proceedings of the 2013 American Council for An Energy Efficiency Economy Industrial Summer Study*. Washington DC: ACEEE.

Hasanbeigi, A., Price, L., Lu, H., Fino-Chen, C., Ke, J. 2013. "What Shaped the Chinese Manufacturing Energy Use Since 1995 and What's the Prediction for the Future?" *Proceedings of the 2013 American Council for An Energy Efficiency Economy Industrial Summer Study*. Washington DC: ACEEE.

Hasanbeigi, A., Price, L., Lu, H., Fino-Chen, C. 2013. "Bottom-up Assessment of Chinese Manufacturing Growth and Energy Use Up to 2020." *Proceedings of the 2013 International Energy Workshop*. Paris: International Energy Agency.

Hasanbeigi, A., Arens, M., Price, L. 2013. *Emerging Energy Efficiency and CO₂ Emissions Reduction Technologies for the Iron and Steel Industry*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-6106E.

Hasanbeigi, A., Zeyi J., Price, L., 2013. *Analysis of the Past and Future Trends of Energy Use in Key Medium and Large-Sized Chinese Steel Enterprises, 2000-2030*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-6380E.

Kong, L., Hasanbeigi, A., Price, L., Liu, H. 2013. *Analysis of Energy-Efficiency Opportunities for the Pulp and Paper Industry in China*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-6107E.

Kong, L., Hasanbeigi, A., Price, L. 2013. *Emerging Energy Efficiency and Greenhouse Gas Mitigation Technologies for the Pulp and Paper Industry*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-5956E.

Hasanbeigi, A., Price, L., Fino-Chen, C., Lu, H., Ke, J. 2013. *Retrospective and Prospective Decomposition Analysis of Chinese Manufacturing Energy Use, 1995-2020*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-6028E.

Zhou N., Price L., Ohshita S., Zheng N., and M. Hu. 2013. "A Guidebook for Low-Carbon Development at the Local Level (in Chinese)." *Science and Management* 33 (5): 21 – 35.

Ohshita, S.B., Zhou, N., Price, L., Fridley, D., Zheng Kanna, N., Hong, L., Lu, H., Fino-Chen, C., He, G. 2014, accepted, in press. "Low Carbon Development for Cities: Methods and Measures." Chapter in Vol. 6 "Sustainability of Energy Systems" in the *Handbook of Clean Energy Systems*. Wiley.

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Ke, J., McNeil, M., Price, L., Khanna, N., Zhou, N., 2013. "Estimation of CO₂ Emissions from China's Cement Production: Methodologies and Uncertainties," *Energy Policy*, Volume 57: 172-181.

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Hasanbeigi, A., Price, L., Fino-Chen, C., Lu, H., Ke, J. 2013. *Retrospective and Prospective Decomposition Analysis of Chinese Manufacturing Energy Use, 1995-2020*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-6028E

Ke, J., Price, L., McNeil, M., Khanna, N., and Zhou, N. 2013. "Analysis and Practices of Energy Benchmarking for Industry from the Perspective of Systems Engineering." *Energy* 54 (2013) 32-44.

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Kong, L., Hasanbeigi, A., Price, L. 2013. *Emerging Energy Efficiency and Greenhouse Gas Mitigation Technologies for the Pulp and Paper Industry*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-5956E.

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Hasanbeigi, A., Price, L., Lin, E. 2012. "Emerging Energy-efficiency and CO₂ Emission-reduction Technologies for Cement and Concrete Production: A Technical Review." *Renewable and Sustainable Energy Reviews* 16 (2012) 6220–6238.

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Hasanbeigi, A., Lobscheid, A., Dai, Y., Price, L., Lu, H. 2012. *Quantifying the Co-benefits of Energy-Efficiency Programs: A Case-study for the Cement Industry in Shandong Province, China*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-5949E.

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Hasanbeigi, A., Lu, H., Price, L. 2012. *International Best Practices for Pre-processing and Co-processing of Municipal Solid Waste and Sewage Sludge in the Cement Industry*. Berkeley, CA: Lawrence Berkeley National Laboratory. LBNL-5581E

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Ke, J., Price, L., Ohshita, S., Fridley, D., Zheng, N., Zhou, N., and Levine, M., 2012. "China's Industrial Energy Consumption Trends and Impacts of the Top-1000 Enterprises Energy-Saving Program and the Ten Key Energy-Saving Projects," *Energy Policy* 45 (2012) 739-751.

Price, L., Zhou, N., Fridley, D., Ohshita, S., Lu, H., Zheng, N., Fino-Chen, C., 2012. "Development of an End-Use Sector-Based Low-Carbon Indicator System for Cities in China," *Proceedings of the American Council for an Energy-Efficient Economy's 2012 Summer Study on Energy Efficiency in Buildings*. Washington, DC: ACEEE.

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http://china.lbl.gov/sites/china.lbl.gov/files/Cement_EE_Tech.pdf

Hasanbeigi, A. and Price, L. 2012. "A Review of Energy Use and Energy Efficiency Technologies for the Textile Industry," *Renewable and Sustainable Energy Reviews*. 16:6 (August 2012): 3648-3665. LBNL-5744E

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Ke, J., Zheng, N., Fridley, D., Price, L., and Zhou, N., 2012. "Potential Energy Savings and CO₂ Emissions Reduction of China's Cement Industry," *Energy Policy* 45 (2012): 739-751.

Hasanbeigi, A., Lin, E., and Price, L., 2012. "Emerging Energy Efficiency Technologies for the Cement and Concrete Production, Iron and Steel, and Textile industry: A Technical Review Paper," accepted for oral presentation at the *Industrial Energy Technology Conference (IETC)*, May 2012. New Orleans, LA.

Hasanbeigi, A., Morrow, W., Fridley, D., Masanet, E., Sathaye, J., Xu, T., Zheng, N., and Price, L. 2012. "Energy Efficiency Potential for China's Cement Industry: A Bottom-up Technology-level Analysis," accepted for oral presentation at the 19th CIRP International Conference on Life Cycle Engineering, March 2012. Berkeley, CA.

van Sambeek, E., Yowargana, P., Liu, S., Jiang, K., Price, L., Zhou, N., and Lu, H., 2012. *Policy Options for Encouraging Energy Efficiency Best Practices in Shandong Province's Cement Industry: Exploring Designs Options for a Sectoral Approach*. Beijing: Azure International.

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Price, L., Hasanbeigi, A., Aden, N., Zhang Chunxia, Li Xiuping, Shangguan Fangqin, 2011. "A Comparison of Iron and Steel Production Energy Use and Energy Intensity in China and the U.S.," *Proceedings of the American Council for an Energy-Efficient Economy's 2011 Summer Study on Energy Efficiency in Industry*. Washington, DC: ACEEE.
http://china.lbl.gov/sites/china.lbl.gov/files/Steel_EI_Comparison.pdf

Price, L. and Lu, H., 2011. "Industrial Energy Auditing and Assessments: A Survey of Programs Around the World," *Proceedings of the European Council for an Energy-Efficient Economy's 2011 Summer Study*. Stockholm: ECEEE.

Jiang, Y. and Price, L., 2011. "Voluntary Energy Efficiency Agreements in China: History, Impact, and Future," *Proceedings of the European Council for an Energy-Efficient Economy's 2011 Summer Study*. Stockholm: ECEEE.

Ohshita, S., Price, L., Tian, Z., 2011. "Target Allocation Methodology for China's Provinces: Energy Intensity in the 12th Five-Year Plan," *Proceedings of the European Council for an Energy-Efficient Economy's 2011 Summer Study*. Stockholm: ECEEE.

Zhou, N., Price, L., and Ohshita, S., 2011. "A Low Carbon Development Guide for Local Government Actions in China." *Proceedings of the European Council for an Energy-Efficient Economy's 2011 Summer Study*. Stockholm: ECEEE.

Hasanbeigi, A., Price, L., Aden, N., Zhang Chunxia, Li Xiuping, Shangguan Fangqin, 2011. *A Comparison of Iron and Steel Production Energy Use and Energy Intensity in China and the U.S.* Berkeley, CA: Lawrence Berkeley National Laboratory.
http://china.lbl.gov/sites/china.lbl.gov/files/US_China_Steel_Comparison_Report_EN_19July2011.pdf

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Zhou, N., Price, L., Ohshita, S., Jiang Kejun, 2011. *A Low Carbon Development Guide for Local Government Actions*. Berkeley, CA: Lawrence Berkeley National Laboratory.

Ohshita, S., Price, L., Tian Zhiyu, 2011. *Target Allocation Methodology for China's Provinces: Energy Intensity in the 12th Five Year Plan*. Berkeley, CA: Lawrence Berkeley National Laboratory (LBNL-4406E).

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